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SPINNING AND TWISTER FRAME

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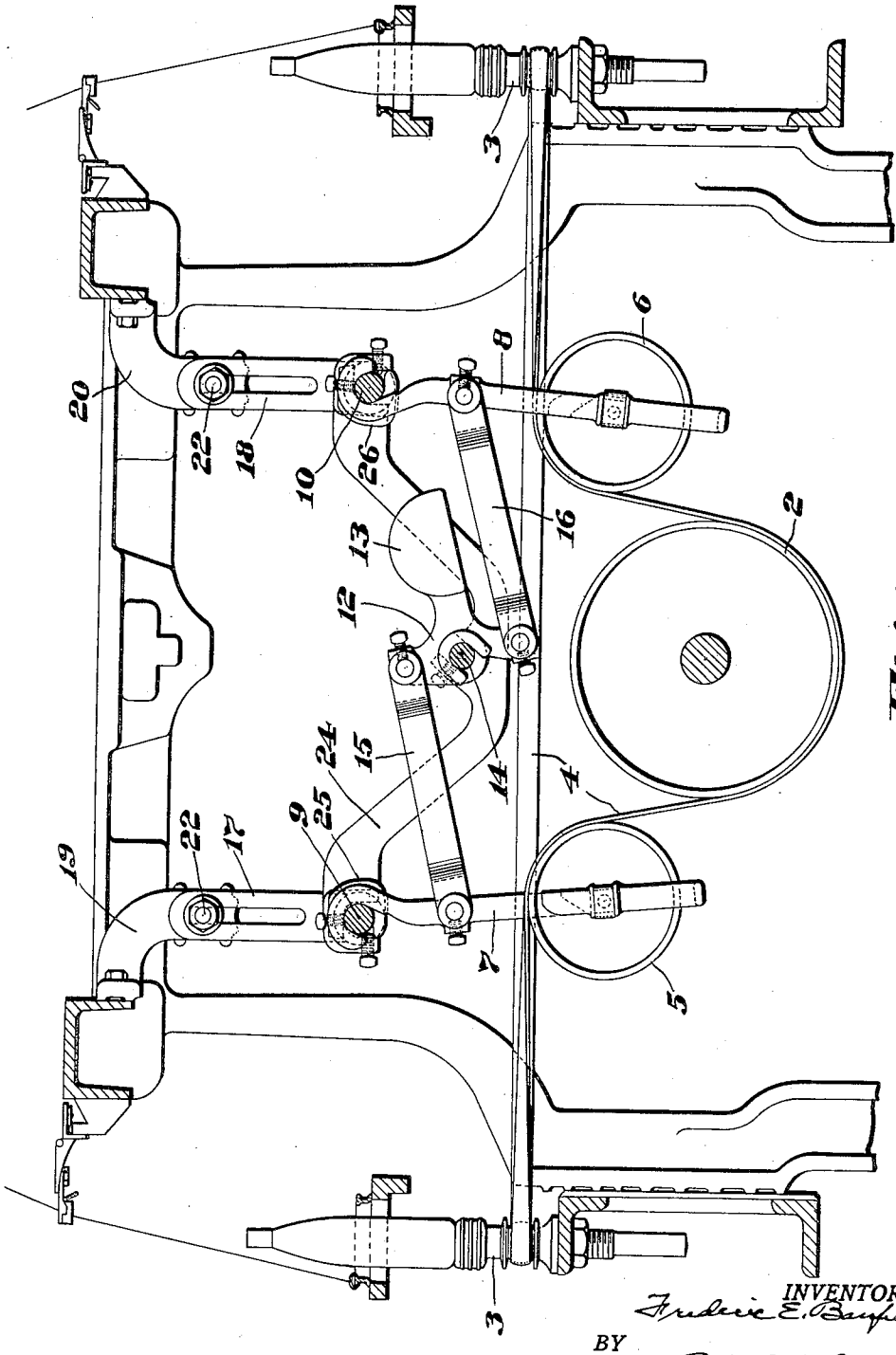


Fig. 1

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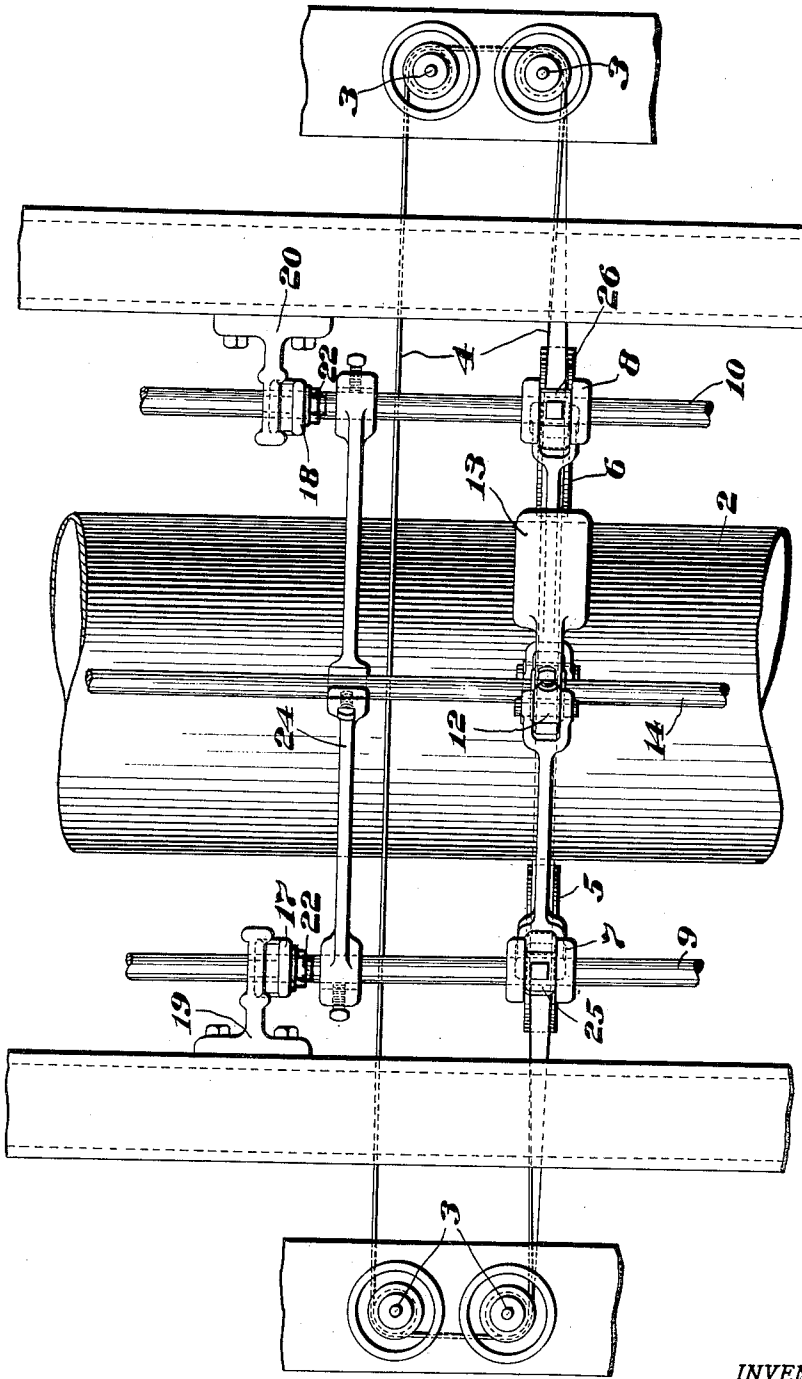


Fig. 2

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SPINNING AND TWISTER FRAME

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8 Claims. (Cl. 118—48)

This invention relates to spinning and twister frames and is more especially concerned with the spindle driving mechanism for machines of this character.

It is the usual practice in both spinning and twister frames to arrange the spindles in parallel rows at opposite sides of the frame and to drive the spindles from a common drum which extends longitudinally of the frame and is located between the rows of spindles. In a common arrangement an endless band or tape partly encircles the drum and is driven by it, this tape also running in contact with the whirls of two spindles at one side of the frame, and then crossing to the opposite side and running in contact with two additional spindles. These tapes or bands may be made of leather, textile fabric, or other suitable material, the textile tape being more commonly used, and they always stretch to varying degrees, depending upon running conditions, variations in atmospheric humidity, and the like. It is, therefore, the usual practice to employ some kind of a takeup or tension mechanism on each tape or band to maintain it under as nearly a uniform tension as possible, notwithstanding variations in stretch of the tape. In some at least of the tension arrangements in common use, a kick is given to the takeup roll by the stopping of a spindle, and this kick produces a jerk in the driving of the other spindles which are operated by the same tape or band. In some constructions also the takeup action is satisfactory only through a relatively small range of stretch.

The present invention deals particularly with these conditions, and it aims to devise a takeup mechanism which will overcome these objections. It is also an object of the invention to improve the tension mechanisms for tape drives with a view to producing a smoother and more uniform driving action notwithstanding variations in operating conditions, to devise a mechanism which will operate equally as well on either a right or left drive, which will require no adjustment in changing from one direction of drive to the other, and to provide a mechanism of this character which can be manufactured and installed economically.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a transverse, sectional view through a part of a spinning frame equipped with a takeup mechanism constructed in accordance with this invention; and

Fig. 2 is a plan view of the mechanism shown in Fig. 1.

The machine shown comprises the usual "tin cylinder" or driving drum 2 extending longitudinally of the frame, and rows of spindles 3 mounted at opposite sides of the frame. An endless tape 4, which is partially wrapped around the drum 2 and driven by it, extends around the whirls of four spindles, as shown in Fig. 2, and drives them. It will be understood that the other spindles of each row are driven in the same manner by additional tapes, not shown, all the tapes being driven by the drum 2. In these respects the construction is like those heretofore used.

At opposite sides of the drum 2 the tape is engaged by two takeup rolls 5 and 6. These rolls are supported, respectively, by arms 7 and 8 having hook shaped upper ends engaging two bars 9 and 10, respectively, which extend longitudinally of the machine frame. The arrangement for supporting the rolls or idlers 5 and 6 in their respective arms 7 and 8 may be like those heretofore used. Both arms 7 and 8 can swing on their respective supporting bars 9 and 10 toward and from the driving drum 2. A double armed lever 12 having a relatively heavy weight 13 cast integral therewith is mounted to swing on a rod 14 which lies between the bars 9 and 10 and extends parallel to them, and two links 15 and 16 connect the arms of this lever 12, respectively, with the supporting arms 7 and 8 for the idlers 5 and 6.

It will be evident from an inspection of Fig. 1 that this arrangement provides positive connections between the two rolls or idlers 5 and 6 for transmitting any movement of one roll toward or from the drum to the other to produce a corresponding movement of the latter roll. The weight 13 acts through these connections to urge both rolls 5 and 6 constantly toward the drum, and thus holds both rolls constantly but yieldingly in their tape tensioning positions. Twice the usual amount of takeup, therefore, is afforded to take up the stretch in the tape, and a substantially uniform tension is maintained on the tape regardless of its direction of travel. Furthermore, the stopping of any spindle does not affect the speed of the other spindles in the slightest. No change in the take-up mechanism is required in shifting from one direction of drive to another.

In order to provide for the convenient adjustment of the takeup rolls for different settings, the bars 9 and 10 are supported by a series of slotted hangers, like those shown at 17 and 18, respectively, in the drawings. The hangers are suspended from brackets 19 and 20 which are bolted, respectively, to opposite sides of the machine frame, and each hanger is adjustably secured to its respective bracket by a bolt 22. Additional brackets, one of which is shown at 24, are supported on the two bars 9 and 10 and connect

them rigidly, these brackets also serving to support the pivot bar 14. It will be observed that the bracket 24 has open sided slots in its opposite ends to receive the bars 9 and 10, and a similar slot in its central portion to receive the rod 14. These brackets thus act both as spacers for the bars 9 and 10 and also as supports for the rod 14. They also give additional stiffness and rigidity to the entire assembly which carries the idlers. It may here be noted that each of the supporting arms 7 and 8 is forked at its upper end where it hooks over the respective bars 9 and 10, and that collars 25 and 26, respectively, secured on the rods 9 and 10 by set screws, are located between the forked members of the respective arms where they serve to position the arms 7 and 8 longitudinally of the bars 9 and 10.

The arrangement above described provides for the convenient adjustment of the idlers to position them at the proper elevation and facilitates the assembling of the takeup mechanism in the machine. The mechanism is relatively inexpensive to manufacture and it has proved exceptionally satisfactory in service.

While I have herein shown and described a preferred embodiment of my invention, it will be evident that the invention may be embodied in other forms without departing from the spirit or scope thereof. For example, a spring may be used in place of the weight 13 as an equivalent for it.

Having thus described my invention, what I desire to claim as new is:

1. In a machine of the character described, the combination with a driving drum, spindles mounted at opposite sides of said drum, and a tape for driving said spindles from said drum, of two takeup rolls running in engagement with said tape at opposite sides of said drum, connections between said rolls for transmitting a takeup movement of one to the other to produce a similar movement at the latter, and means acting through said connections for exerting a yielding takeup action on both rolls simultaneously.

2. In a machine of the character described, the combination with a driving drum, spindles mounted at opposite sides of said drum, and a tape for driving said spindles from said drum, of two takeup rolls running in engagement with said tape at opposite sides of said drum, positive connections between said rolls for transmitting a takeup movement of one to the other to produce a similar movement at the latter, and yielding means acting through said connections for producing a takeup movement of both rolls simultaneously.

3. In a machine of the character described, the combination with a driving drum, spindles mounted at opposite sides of said drum, and a tape for driving said spindles from said drum, of two takeup rolls running in engagement with said tape at opposite sides of said drum, swinging supports for said rolls, a weight, and positive connections between said weight and said supports for causing the weight to act through both rolls simultaneously to give them a yielding takeup movement and to transmit the takeup movement of one of said rolls to the other.

4. In a machine of the character described, the combination with a driving drum, spindles mounted at opposite sides of said drum, and a tape for driving said spindles from said drum, of two takeup rolls running in engagement with said tape at opposite sides of said drum, swinging supports for said rolls, a weight mounted between said supports to swing about an axis, and links connecting both of said supports with said weight at opposite sides, respectively, of said axis for causing said weight to act through both of said rolls simultaneously to tighten the tape.

5. In a machine of the character described, the combination with a driving drum, spindles mounted at opposite sides of said drum, and a tape for driving said spindles from said drum, of two takeup rolls running in engagement with said tape at opposite sides of said drum, swinging supports for said rolls, a weight, and independent positive connections between said weight and said supports for causing the weight to pull said rolls toward said drum simultaneously and thereby to tighten the tape.

6. In a machine of the character described, the combination with a driving drum, spindles mounted at opposite sides of said drum, and a tape for driving said spindles from said drum, of two takeup rolls running in engagement with said tape at opposite sides of said drum, arms supporting said respective rolls and suspended from points above the rolls, said arms supporting said rolls for swinging movement toward and from said drum, connections between said rolls for transmitting a take-up movement of one to the other to produce a similar movement at the latter roll, and means acting through said connections for exerting a yielding takeup action on both rolls simultaneously.

7. In a machine of the character described, the combination with a driving drum extending longitudinally of the machine frame, rows of spindles mounted at opposite sides of said drum, and tapes running from said drum and around the whirls of said spindles for driving said spindles from said drum, of two bars extending longitudinally of the frame, hangers adjustably supporting said bars from said frame, a pivot rod extending longitudinally of the frame between said bars, brackets connecting said bars with said rod and supporting the rod, two rolls engaging each tape at opposite sides of said drum, swinging arms supported on said bars and carrying the respective rolls, and means for connecting said arms together and acting yieldingly on them to urge them constantly into their tape tightening positions.

8. In a machine of the character described, the combination with a driving drum extending longitudinally of the machine frame, rows of spindles mounted at opposite sides of said drum, and tapes running from said drum and around the whirls of said spindles for driving said spindles from said drum, of two bars extending longitudinally of the frame, hangers adjustably supporting said bars from said frame, a pivot rod extending longitudinally of the frame between said bars, brackets connecting said bars with said rod and supporting the rod, two rolls engaging each tape at opposite sides of said drum, swinging arms supported on said bars and carrying the respective rolls, a weight pivoted on said rod, and links connecting said weight with both of said arms and serving to utilize the action of gravity on said weight to press both of said rolls constantly against said tape.

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